

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 10 July 2000 (10.07.00)	
International application No. PCT/GB99/03641	Applicant's or agent's file reference PDG/21003
International filing date (day/month/year) 03 November 1999 (03.11.99)	Priority date (day/month/year) 03 November 1998 (03.11.98)
Applicant WESTON, Martin	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

02 June 2000 (02.06.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Pascal Piriou Telephone No.: (41-22) 338.83.38
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# PATENT COOPERATION TREATY

# PCT

REC'D 12 JUL 2000

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PDG/21003	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/03641	International filing date (day/month/year) 03/11/1999	Priority date (day/month/year) 03/11/1998
International Patent Classification (IPC) or national classification and IPC H04N5/14		
Applicant SNELL & WILCOX LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  02/06/2000	Date of completion of this report  11.07.2000
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Brod, R  Telephone No. +49 89 2399 8962  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/03641

**I. Basis of the report**

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

**Description, pages:**

1-9 as originally filed

**Claims, No.:**

1-24 as originally filed

**Drawings, sheets:**

1/7-7/7 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-24
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-24
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-24
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Independent claims 1,6,14,15,16,17,20,23:

(Claims 14 to 16 are no dependent claims as defined in Rule 6.4 although they contain a reference to another claim (PG-III, 3.7a).

1.1 Claim 1:

This claim relates to a method of analysing motion between adjacent fields of an interlaced video signal, comprising the steps of vertically interpolating one or both of the fields to produce respective signals for the two fields which correspond in vertical position; subtracting the signals to provide a field difference signal; and removing a component in the field difference signal which arises from vertical detail.

Closest prior art is D1: US-A-5 291 280 (XU DONG ET AL) 1 March 1994 (1994-03-01) cited in the application which discloses the detection of motion between interlaced video fields to provide a field motion signal, therein a signal formed by subtracting across a field delay is compared with a signal formed by subtracting across a delay of a field less a line. After filtering, rectifying and thresholding, the smaller of these two signals is taken as the field motion signal.

Starting from this prior art the problem arises that interpreting a difference taken across a field delay is complicated in interlace television scanning, since the lines of successively fields are vertically misaligned by one line pitch and so, where vertical detail exists, the magnitude of the difference signal will not fall to zero, even if the field corresponds to the same scene and temporal phase.

The solution provided by the subject-matter of claims 1,6,14,15,16,17,20,23 obtains an exact comparison of past and present images as disclosed in figs. 3 a to b bear of any shift by using a concept in which motion between adjacent fields of an interlaced video signal is analysed by vertically interpolating the current field to produce a line signal which corresponds in vertical position with lines from the succeeding and preceding

**INTERNATIONAL PRELIMINARY  
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fields; and subtracting the signals to provide a field difference. The effect of vertical detail is at least reduced if not totally removed.

The above concept is neither known nor obvious from the documents cited in the ESR/ISR:

The remainder of the prior art is silent as to any vertical interpolation except for D2: PATENT ABSTRACTS OF JAPAN vol. 007, no. 136 (E-181), 14 June 1983 (1983-06-14) & JP 58 050863 A (MATSUSHITA DENKI SANGYO KK), 25 March 1983 (1983-03-25) which discloses performing vertical interpolation where vertical correlation is small and to inhibit vertical interpolation where vertical correlation is large.

D3: EP-A-0 343 728 (PHILIPS NV) 29 November 1989 (1989-11-29) discloses motion detection based on picture signal value comparisons between picture elements (P) in consecutive, interlaced television pictures (n-2, n-1), (n, n+1), (n+2, n+3), motion or no motion, respectively being determined in dependence on the fact whether comparison results exceed or do not exceed a threshold value. Changes in picture information between movie pictures (MP1, MP2, MP3) can negatively influence the television motion detection if they make use of a preceding and a subsequent television picture. To prevent this, an instantaneous picture element (P1) in a first field (n) of a television picture (n, n+1) is compared with a number (P4, P5, P6, P7) of surrounding picture elements in a second field (n+1) and an instantaneous picture element (P11) in the second field (n+1) is compared with a number (P14, P15, P16, P17) of surrounding picture elements in the first field (n).

D4: US-A-5 365 273 (CORREA CARLOS ET AL) 15 November 1994 (1994-11-15) discloses a film mode detection method and corresponding relatively non complex hardware implementation compares the amplitudes of pixels of corresponding image areas of three successive field to determine if the pixel amplitudes are monotonically increasing or decreasing. Depending on the comparison a positive or negative polarity indication is generated and these indications are combined within each field to generate a polarity indication representing each respective field. The field sequence of such field polarity indications are thereafter compared with a predetermined pattern to determine whether the video signal is from a film or video-mode source.

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EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB99/03641

**1.2 Claim 6:**

This claim corresponds to claim 1 and adds the feature of taking weighted sums of lines from within the same field so as to obtain signals corresponding to similar vertical positions. Thus the same remarks as to novelty and inventive step are made.

**1.3 Claim 14:**

This claim is formally dependent on claim 1 and adds the feature that the apparatus is specialised for geometric transformation of television pictures for special effects in which an interpolation process is modified in response to a field difference signal. Thus also for this apparatus claim the same remarks as to novelty and inventive step are made.

**1.4 Claim 15:**

This claim is formally dependent on claim 1 and adds the feature that the apparatus is specialised for aspect ratio conversion of television pictures in which an interpolation process is modified in response to a field difference signal. Thus also for this apparatus claim the same remarks as to novelty and inventive step are made.

**1.5 Claim 16:**

This claim is formally dependent on claim 1 and adds the feature that the apparatus is specialised for standards conversion of television pictures in which an interpolation process is modified in response to a field difference signal. Thus also for this apparatus claim the same remarks as to novelty and inventive step are made.

**1.6 Claim 17:**

This claim corresponds to claim 1 and adds the feature of taking a weighted sum of contributions from one or more selected input fields for producing signal of at least two input fields and at least one pair of adjacent input fields; the field difference signal(s) being used for the selection of input fields. Thus the same remarks as to novelty and inventive step are made.

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EXAMINATION REPORT - SEPARATE SHEET**

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**1.7 Claim 20:**

This claim corresponds to claim 1 and adds the feature of a taking a weighted sum of contributions over a filter aperture which defines the lines and fields from which a contribution is to be taken and the weighting of each contribution and utilising the field difference signal(s) to select a filter aperture. Thus the same remarks as to novelty and inventive step are made.

**1.8 Claim 23:**

This claim corresponds to claim 1 and adds the feature of automatically changing the operation of a video process between a film mode in which adjacent fields are assumed to correspond to the same point in time and a video mode in which adjacent fields are assumed to correspond to different points in time; using at least three input fields yielding into the preceding, current and succeeding field difference signals; and, if after comparison the field difference signals are different, changing the selection to film mode and, if after comparison the field difference signals are similar, changing the selection to video mode. Thus the same remarks as to novelty and inventive step are made.

2. Dependent claims 2 to 5, 7 to 13, 18 to 19, 21 to 22 and 24 disclose new and inventive embodiments (Art. 33(2) to (3) PCT).

**Re Item VIII**

**Certain observations on the international application**

Although method claims 1,6,17,20 and 23 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought or in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

Hence, claims 1,6,17,20 and 23 do not meet the requirements of Article 6 PCT.



INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>PDG/21003</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 99/ 03641</b>	International filing date (day/month/year) <b>03/11/1999</b>	(Earliest) Priority Date (day/month/year) <b>03/11/1998</b>
Applicant  <b>SNELL &amp; WILCOX LIMITED et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/03641

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N5/14 H04N7/01

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A ✓	US 5 291 280 A (XU DONG ET AL) 1 March 1994 (1994-03-01) cited in the application abstract column 5, line 35 -column 7, line 28; figure 3 ---	1,6,17, 20,23
A ✓	EP 0 343 728 A (PHILIPS NV) 29 November 1989 (1989-11-29) the whole document ---	1,6,17, 20,23
A ✓	US 5 365 273 A (CORREA CARLOS ET AL) 15 November 1994 (1994-11-15) column 1, line 28 - line 36; figure 6 ---	1,6,17, 20,23
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

19 January 2000

Date of mailing of the international search report

25/01/2000

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A ✓	PATENT ABSTRACTS OF JAPAN vol. 007, no. 136 (E-181), 14 June 1983 (1983-06-14) & JP 58 050863 A (MATSUSHITA DENKI SANGYO KK), 25 March 1983 (1983-03-25) abstract -----	1,6,17, 20,23

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03641

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5291280	A	01-03-1994	NONE	
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EP 0343728	A	29-11-1989	NL 8801347 A	18-12-1989
			DE 68917026 D	01-09-1994
			DE 68917026 T	16-02-1995
			JP 2025179 A	26-01-1990
			US 4933759 A	12-06-1990
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US 5365273	A	15-11-1994	DE 4213551 A	28-10-1993
			CN 1079603 A,B	15-12-1993
			DE 59308717 D	06-08-1998
			EP 0567072 A	27-10-1993
			ES 2120458 T	01-11-1998
			JP 6105292 A	15-04-1994
			SG 43991 A	14-11-1997
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JP 58050863	A	25-03-1983	NONE	
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